

## WHAT IS CLAIMED IS:

1. A printing control apparatus for outputting print data and executing printing, comprising:

storage means, to which rendering instructions  
5 are input, for storing the rendering instructions page by page;

first rendering means for developing rendering instructions applicable to each line into multivalued bitmap data and subjecting the multivalued bitmap data  
10 to color processing and n-value conversion processing;

second rendering means for subjecting the rendering instructions to color processing and n-value conversion processing color by color of the rendering instructions, storing the results in the form of an n-  
15 valued pattern, and pasting the n-valued pattern in an applicable area of the rendering instructions to thereby achieve development into n-valued bitmap data;

determining means for reading out rendering instructions that have been stored in said storage  
20 means and determining whether the rendering instructions include a rendering instruction that cannot be implemented by overwrite; and

control means for exercising control so as to use said first rendering means if said determining means  
25 determines that the rendering instructions include a rendering instruction that cannot be implemented by overwrite, and use said second rendering means if said

determining means determines that the rendering instructions do not include a rendering instruction that cannot be implemented by overwrite.

- 5    2. The apparatus according to claim 1, wherein said first rendering means includes:

means for generating multivalued bitmap data based upon the rendering instructions;

10    first color correcting means for performing a color correction of the multivalued bitmap data;

first color converting means for converting colors of the multivalued bitmap data that has been subjected to the color correction by said first color correcting means to multivalued bitmap data of another color space; and

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n-value converting means for subjecting the multivalued bitmap data that has been subjected to the color conversion by said first color converting means to an n-value conversion.

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3. The apparatus according to claim 1, wherein said second rendering means includes:

second color correcting means for correcting colors of an image included in the rendering instructions;

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second color converting means for converting colors of the image that has been subjected to the

color correction by said second color correcting means to colors of another color space;

image n-value converting means for subjecting the image data of the image that has been subjected to the color conversion by said second color converting means to an n-value conversion and creating an n-valued pattern; and

means for creating n-valued bitmap data based upon the n-valued pattern obtained by the n-value conversion performed by said image n-value converting means.

4. The apparatus according to claim 1, wherein said storage means sorts and stores entered rendering instructions, and said first and second rendering means read out and process the rendering instructions in the order in which they have been sorted and stored in said storage means.

5. The apparatus according to claim 4, wherein the sorting order is in a direction from the top to the bottom of a page.

6. The apparatus according to claim 1, wherein the value of n is 2.

7. A printing control method for outputting print

data and executing printing, comprising:

a storage step of inputting rendering instructions and storing the rendering instructions in a memory page by page;

5 a first rendering step of developing rendering instructions applicable to each line into multivalued bitmap data and subjecting the multivalued bitmap data to color processing and n-value conversion processing;

a second rendering step of subjecting the  
10 rendering instructions to color processing and n-value conversion processing color by color of the rendering instructions, storing the results in the form of an n-valued pattern, and pasting the n-valued pattern in an applicable area of the rendering instructions to  
15 thereby achieve development into n-valued bitmap data;

a determining step of determining whether rendering instructions that have been read out of the memory include a rendering instruction that cannot be implemented by overwrite; and

20 a control step of exercising control so as to use said first rendering step if it is determined at said determining step that the rendering instructions include a rendering instruction that cannot be implemented by overwrite, and use said second  
25 rendering step if it is determined at said determining step that the rendering instructions do not include a rendering instruction that cannot be implemented by

overwrite.

8. The method according to claim 7, wherein said first rendering step includes:

5 a step of generating multivalued bitmap data based upon the rendering instructions;

a first color correcting step of performing a color correction of the multivalued bitmap data;

10 a first color converting step of converting colors of the multivalued bitmap data that has been subjected to the color correction at said first color correcting step to multivalued bitmap data of another color space; and

15 an n-value converting step of subjecting the multivalued bitmap data that has been subjected to the color conversion at said first color converting step to an n-value conversion.

9. The method according to claim 7, wherein said second rendering step includes:

20 a second color correcting step of correcting colors of an image included in the rendering instructions;

25 a second color converting step of converting colors of the image that has been subjected to the color correction at said second color correcting step to colors of another color space;

an image n-value converting step of subjecting  
the image data of the image that has been subjected to  
the color conversion at said second color converting  
step to an n-value conversion and creating an n-valued  
5 pattern; and

a step of creating n-valued bitmap data based  
upon the n-valued pattern obtained by the n-value  
conversion performed at said image n-value converting  
step.

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10. The method according to claim 7, wherein inputted  
rendering instructed are sorted and stored in the  
memory at said storage step, and the rendering  
instructions are read out and processed in said first  
15 and second rendering steps in the order in which they  
have been sorted and stored in the memory.

11. The method according to claim 10, wherein the  
sorting order is in a direction from the top to the  
20 bottom of a page.

12. A printer driver for receiving rendering  
instructions from an application, creating print data  
and outputting the print data to a printing apparatus,  
25 comprising:

storage means, to which rendering instructions  
are input from the application, for storing the

rendering instructions in a memory page by page;

first rendering means for expanding rendering instructions applicable to each line, which rendering instructions have been stored in the memory, into  
5 multivalued bitmap data and subjecting the multivalued bitmap data to color processing and n-value conversion processing;

second rendering means for subjecting the rendering instructions that have been stored in the  
10 memory to color processing and n-value conversion processing color by color of the rendering instructions, storing the results in the form of an n-valued pattern, and pasting the n-valued pattern in an applicable area of the rendering instructions to  
15 thereby achieve development into n-valued bitmap data;

determining means for reading out rendering instructions that have been stored in the memory and determining whether the rendering instructions include a rendering instruction that cannot be implemented by  
20 overwrite; and

control means for exercising control so as to use said first rendering means if said determining means determines that the rendering instructions include a rendering instruction that cannot be implemented by  
25 overwrite, and use said second rendering means if said determining means determines that the rendering instructions do not include a rendering instruction

that cannot be implemented by overwrite.

13. The printer driver according to claim 12, wherein said first rendering means includes:

5 means for generating multivalued bitmap data based upon the rendering instructions;

first color correcting means for performing a color correction of the multivalued bitmap data;

10 first color converting means for converting colors of the multivalued bitmap data that has been subjected to the color correction by said first color correcting means to multivalued bitmap data of another color space; and

15 n-value converting means for subjecting the multivalued bitmap data that has been subjected to the color conversion by said first color converting means to an n-value conversion.

14. A printer driver according to claim 12, wherein said second rendering means includes:

20 second color correcting means for correcting colors of an image included in the rendering instructions;

25 second color converting means for converting colors of the image that has been subjected to the color correction by said second color correcting means to colors of another color space;



image n-value converting means for subjecting the  
image data of the image that has been subjected to the  
color conversion by said second color converting means  
to an n-value conversion and creating an n-valued  
5 pattern; and

means for creating n-valued bitmap data based  
upon the n-valued pattern obtained by the n-value  
conversion performed by said image n-value converting  
means.

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